



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,805	03/30/2001	Bahram Javidi	UTC-0016	9149
23413	7590	08/24/2004	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			CARTER, AARON W	
			ART UNIT	PAPER NUMBER
			2625	
DATE MAILED: 08/24/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/822,805	Applicant(s) JAVIDI ET AL.	
	Examiner Aaron W Carter	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-67,74-79 and 81-84 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14,16-29,37-44,46-67,74-79 and 81-84 is/are rejected.
- 7) ☐ Claim(s) 15,30-36 and 45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/30/2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/01, 2/02, 3/02</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings filed on March 30, 2001 are objected to because of draftperson's remarks (see attached PTO-948). In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-14, 16-29, 37-44, 46-52, 74-79 and 81-84 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,497,433 to Itoh et al. ("Itoh").

As to claim 1, Itoh discloses a method of pattern recognition comprising:

Generating a hologram of a reference object (Fig. 1b and column 2, lines 54-56);

Generating a hologram of an input object (Fig. 1b and column 2, lines 50-53 and lines 62-65); and

Correlating the hologram of the reference object with the hologram of the input object to generate a set of correlation peaks (Fig. 1b, column 3, lines 7-11 and column 6, lines 32-42,

Art Unit: 2625

wherein the input image is manipulated to obtain correlation values that correspond to correlation peaks).

As to claim 2, Itoh discloses the method as set forth in claim 1, further comprising analyzing the set of correlation peaks generated by the correlation of the hologram of the reference object with the hologram of the input object wherein the presence of a correlation peak indicates similarity between the reference object and the input object and wherein the lack of the presence of a correlation peak indicates dissimilarity between the reference object and the input object (column 6, lines 32-42, wherein maximum correlation value corresponds to correlation peak).

As to claim 3, Itoh discloses the method as set forth in claim 1, further comprising recording the hologram of the reference object (column 4, lines 8-12).

As to claim 4, Itoh discloses the method as set forth in claim 1, further comprising recording the hologram of the input object (column 5, lines 8-18).

As to claim 5, Itoh discloses the method as set forth in claim 1, wherein the correlating of the hologram of the reference object with the hologram of the input object comprises:

Transforming the hologram of the reference object (Fig. 1b and column 5, lines 22-41);

Transforming the hologram of the input object (Fig. 1b and column 4, lines 55 – column 5, line 19);

Multiplying the transformation of the hologram of the reference object by the transformation of the hologram of the input object (Fig. 1b, M1 x M2 and column 5, lines 53-57).

As to claim 6, Itoh discloses the method as set forth in claim 5, wherein the transforming of the hologram of the reference object comprises Fourier transforming the hologram of the reference object and wherein transforming the hologram of the input object comprises Fourier transforming the hologram of the input object (Fig. 1b, column 4, lines 55 – column 5, line 19 and column 5, lines 22-41).

As to claim 7, Itoh discloses the method as set forth in claim 6, further comprising transforming the multiplication of the transformation of the hologram of the reference object and the transformation of the hologram of the input object (Fig. 1b and column 5, lines 58-61).

As to claim 8, Itoh discloses a method of pattern recognition comprising:

Generating a hologram of a reference object (Fig. 1b and column 2, lines 54-56);

Generating a hologram of an input object (Fig. 1b and column 2, lines 50-53 and lines 62-65);

Defining a window within the hologram of the input object (column 3, lines 2-11, wherein the entire input image is defined as the window);

Correlating the hologram of the reference object with the window defined within the hologram of the input object to generate a set of correlation peaks (Fig. 1b, column 3, lines 7-11

Art Unit: 2625

and column 6, lines 32-42, wherein the input image is manipulated to obtain correlation values that correspond to correlation peaks).

As to claims 9-14, please refer to the rejections made above for claims 2-7 respectively.

As to claims 16-22, please refer to rejections made above for claims 1-7 respectively.

As to claim 23, please refer to rejections made above for claim 8.

As to claims 24-29, please refer to rejections made above for claims 2-7 respectively.

As to claim 37, Itoh discloses the method as set forth in claim 3, wherein the recording of the hologram of the reference object includes digitally recording the hologram of the reference object (column 4, lines 8-12, wherein it is inherent that memory is digital).

As to claim 38, Itoh discloses the method as set forth in claim 37, wherein the digitally recording of the hologram of the reference object comprises storing the hologram of the reference object in a computer readable storage medium (column 4, lines 8-12, wherein it is inherent that the memory is a form of computer readable storage medium).

As to claims 39 and 40, please refer to rejections made above for claims 37 and 38 respectively.

As to claims 41 and 42, please refer to rejections made above for claims 37 and 38 respectively.

As to claims 43 and 44, please refer to rejections made above for claims 37 and 38 respectively.

As to claims 46 and 47, please refer to rejections made above for claims 1 and 2 respectively.

As to claims 48 and 50, please refer to rejections made above for claims 8 and 2, respectively.

As to claim 49, Itoh discloses the method as set forth in claim 46, further comprising autocorrelating the first hologram and comparing the autocorrelation of the first hologram with the correlation of the first hologram with second hologram (column 6, lines 19-31).

As to claim 51, Itoh discloses the method as set forth in claim 1, wherein the reference object comprises an optical image, a digitized image, a 1D set of data, a 2D set of data, a multi-dimensional set of data, an electrical signal, an optical signal, a 2D phase object, a multi-dimensional phase object or a color object (column 2, lines 50-56, reference image corresponds to reference object and is inherently several of the above mentioned types).

As to claim 52, Itoh discloses the method as set forth in claim 1, wherein the input object comprises an optical image, a digitized image, a 1D set of data, a 2D set of data, a multi-dimensional set of data, an electrical signal, an optical signal, a 2D phase object, a multi-

Art Unit: 2625

dimensional phase object or a color object (column 2, lines 50-56, wherein input image corresponds to input object and is inherently several of the above mentioned types).

As to claim 74, please refer to the rejections made for claim 51 above.

As to claim 75, please refer to the rejections made for claim 52 above.

As to claim 76, please refer to the rejections made for claim 51 above.

As to claim 77, please refer to the rejections made for claim 52 above.

As to claim 78, please refer to the rejections made for claim 51 above.

As to claim 79, please refer to the rejections made for claim 52 above.

As to claim 81, Itoh discloses the method as set forth in claim 1, wherein correlating the hologram of the reference object with the hologram of the input object comprises:

Displaying the holograms of the input object and the reference object on electrically or optically addressable spatial light modulators (column 2, lines 62-65 and column 3, lines 2-6);

Addressing the electrically or optically addressable spatial light modulators with a reference beam; and processing the holograms optically to generate a set of correlation peaks (column 3, lines 2-11).

As to claim 82, please refer to the rejections made for claim 81 above.

As to claim 83, please refer to the rejections made for claim 81 above.

As to claim 84, please refer to the rejections made for claim 81 above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 53-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh in view of USPN 6,366,698 to Yamakita.

As to claims 53-55, Itoh discloses the method of claim 1.

Itoh does not disclose expressly his invention further comprising conveying the hologram of the reference or input object to a remote location over a distributed computer network, however in Fig. 1a, the memory locations elements 7 and 11, appear to be located at a distance from the rest of the device, which as well known the art could be considered databases at a remote location.

However, Yamakita discloses a pattern recognition process that involves conveying reference and input data over a computer network (Fig. 4 and 10B).

Itoh & Yamakita are combinable because they are from same area of pattern recognition.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the invention of Itoh with the teaching provided by Yamakita.

Art Unit: 2625

The suggestion/motivation for doing so would have been that by conveying the reference and input object to a remote location on a computer network, provides a device having a simple structure with easy operation (Yamakita, column 2, lines 53-56).

Therefore, it would have been obvious to combine Itoh with Yamakita to obtain the invention as specified in claims 53-55.

As to claim 56-58, please refer to the rejections made above to claims 53-55, respectively.

As to claim 59-61, please refer to the rejections made above to claims 53-55, respectively.

As to claim 62, Itoh discloses the method as set forth in claim 1, while Yamakita further discloses processing the reference object by image compression (column 11, lines 52-67).

As to claim 63, the combination of Itoh and Yamakita disclose the method as set forth in claim 62, Yamakita further discloses conveying the compressed data to remote locations over a distributed computer network (Fig. 4, 10b, and column 11, lines 52-67).

As to claim 66, the combination of Itoh and Yamakita disclose the method as set forth in claim 62, Yamakita further discloses processing data of the reference object by image decompression (column 11, lines 52-67, wherein if something is compressed it is inherent that it will be decompressed for use).

Art Unit: 2625

As to claims 64, 65 and 67, please refer to the rejection made for claims 62, 63, and 66.

Allowable Subject Matter

6. Claims 15, 30-36 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 5,619,596 to Iwaki et al. discloses hologram correlation.

USPN 5,339,305 to Curtis et al. discloses hologram correlation.

USPN 5,754, 691 to Hong discloses hologram correlation.

USPN 5,875,108 to Hoffberg et al. discloses hologram correlation.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron W Carter whose telephone number is (703) 306-4060. The examiner can normally be reached on 7am - 3:30 am (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2625

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


awc



BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600